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Suppliers' Information Note

For the BT Network

Enhanced Information Service for Emergency Calls Service Description

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Introduction

This SIN (SIN 278) provides information about the BT Enhanced Information Service for Emergency Calls (EISEC), the signalling mechanism to be used between the customer premise equipment and the BT network, and access to an EISEC-DB (data base for Emergency Authority (EA) access).

This service will give a significant reduction in call handling time through automated provision of location information and also assist with management of hoax 999/112 calls.

This service is only available to Emergency Authorities.

Users of the service must have registered IP addresses. Further information on this can be found at **http://www.ripe.net/**

The following table contains a list of terms and abbreviations:

AML	Advanced Mobile Location
CLI	Calling Line Identity
CLIR	Calling Line Identity Restriction
DASS	Digital Access Signaling System
DLE	Digital Local Exchange
EA	Emergency Authority
EISEC	Enhanced Information Service for Emergency Calls
EISEC - DB	This is the database accessed by EAs for details relevant to a particular emergency call.
EISEC Server	This is the Server server (in the BT network) which provides the EA with access to the EISEC - DB.
ESDB	Emergency Service Data Base
Flash	Flash is a term sometimes used for Time Break Recall (a timed break in the DC path).
GIS	Geographic Information System
IP – PBX	Internet Protocol – Private Branch Exchange
NAA	Name and Address
NAE	Network Address Extension
NTP	Network Terminating Point
OSC	Operator Service Centre
PBX	Private Branch Exchange
PSTN	Public Switched Telecoms Network
PDU	Protocol Data Unit
SIN	Suppliers' Information Note (BT Publication)
TCP/IP	Transmission Control Protocol / Internet Protocol
User	In the context of this service, the user is the EA who has access to the EISEC service.
VOIP	Voice over Internet Protocol

Table 1. Terms and Abbreviations

Overview, Enhanced Information Service for Emergency Calls

1.1 Emergency Call Handling Overview

When a BT operator receives an emergency call for Fire, Police, Ambulance, Mountain Rescue, Cave Rescue, or Coast Guard services they can pass to the relevant Emergency Authority (EA) certain information about the call verbally.

Calling Line Identity (CLI) is a mandatory requirement for all UK originated calls. However, although CLI is available to the number being called, the facility to forward it to the Emergency Authorities is not available as a general network facility. This is due to 999 & 112 calls going via operators, who terminate the original call and determine the authenticity of the call. Operators access the ESDB system to determine the location of the person calling and a list of appropriate Emergency Authorities. For genuine calls, the call is then connected to the appropriate Emergency Authority remaining under the control of the BT switch- Ambulance, Coastguard, Fire, or Police.

1.2 EISEC Process

BT has enhanced the service it offers the EAs, by enabling the network to allow electronic transfer of the CLI to the EA, and to allow the EA access to an EISEC-DB in order to directly collect location information relevant to the point of call origin.

The service will be available to EAs receiving calls using either:

a) primary or basic rate ISDN lines, or

b) Corporate SIP (SIP Trunking)

that have been appropriately configured.

This service will operate in two separate stages, 1) the delivery of an emergency call from the BT operator to an emergency authority, and 2) the ability for the emergency authority to collect data relevant to that call from a BT database.

Stage 1.

The CLI of the call originator and other supporting information will be forwarded to the EA in the call setup message of the ISDN call. This will allow faster handling of calls while minimising the potential for error. The call set-up message will provide the EA with the Originating Caller's CLI, and using extra WXYZ digits the Operator Service Centre (OSC) identification plus a Network Operator identifier, and where possible, mobile zone code.

> NOTE 1:
> The transfer of mobile zone code information through this means is no longer recommended – more detailed mobile location information is now available through Stage 2.

Emergency calls transferred to the EAs carry a modified CLI that wherever possible normally includes the WXYZ digits on the EISEC call set-up. However if the EISEC call setup fails, or if there is no response to the call setup request to the EA within 4 seconds, the BT Operator Platform makes a second automatic re-attempt with the caller's CLI sent unaltered. A CLI will always be sent to the EA, modified or not.

CLI Information can also be passed verbally between Operators and the EAs on call handover if necessary.

NOTE 2:

The sending of WXYZ will cease sometime after BT's legacy platform is decommissioned. The IP based platform has a temporary workaround in place which will be removed once a firm date has been agreed to stop the sending of WXYZ.

Stage 2

In most situations the EA will wish to confirm the location of the current call. For those situations the EA will be able to access a secure BT database for further information relevant to the call. The information available will be limited to name and installation address for fixed line calls, current location information for mobile handsets or in-car Telematics systems making emergency calls, and a default location for most VoIP calls corresponding to a VoIP user's normal/home location.

It is increasingly possible to provide precise location information for mobile calls, which may require more than one search request to the BT database for a mobile call, as covered in the annex to this document. This more precise location is now available on about 80% of mobile calls so it is **very important to be able to support more than one search request.**

Access to the EISEC-DB will be subject to the applicable requirements of the Privacy and Electronic Communications rules published by the Information Commissioner's Office.

If necessary, in situations when access is unavailable, and the caller cannot provide the location needed to respond, the operator can provide location information verbally.

Service Availability and Tariffs

The Service is delivered using standard ISDN lines (primary or basic rate) or SIP trunks. This Service is available throughout the UK.

The EISEC-DB access is provided by a secure, managed ISDN or IP Clear ADSL Connect Plus solution.

For further information on this service please contact:

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General

1.3 Service Schematic

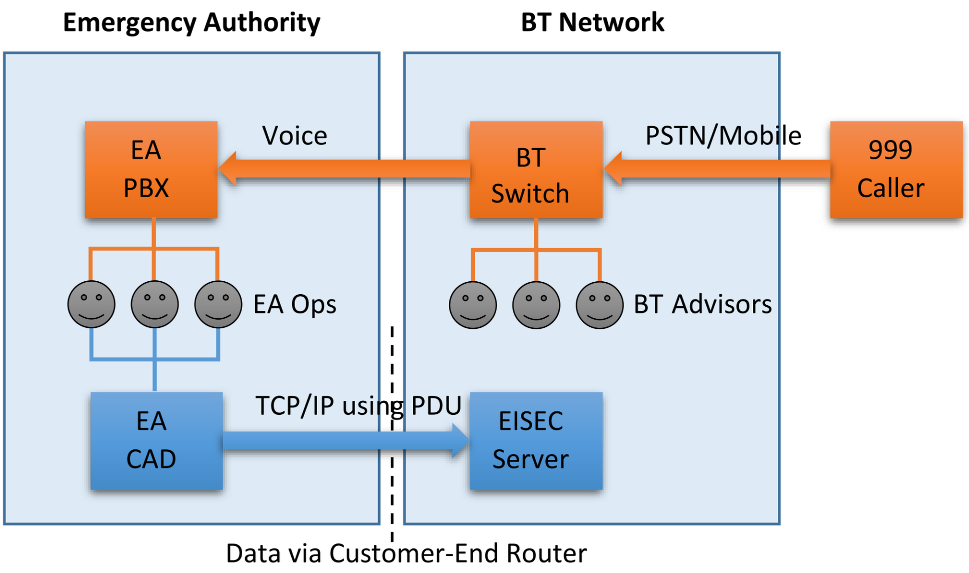

Figure 1 Service Schematic

In the above diagram the router is provided by BT as part of the managed network.

The above schematic shows the key elements of this service.

When the BT Switch receives a 999/112 call it transfers the call to the appropriate authority. The CLI from the 999/112 caller is automatically transferred to the EA in the CLI field in the call set-up message

If the EA requires further information about the call it can access the EISEC database (EISEC-DB) to retrieve location details. In order to do this a separate "data query" is made from the EA via the router to the BT network. In order to facilitate this the EA will establish a TCP/IP connection to EISEC and send messages using the PDU protocol

The interface protocol specification for the use of PDUs is annexed to this document. The request and response functions covered are:-

Logon Request	Password Change Request	Location Query Request
Logoff Request / Response	Poll Request / Response	Logon Reject Response
Logon Accept Response	Grace Logon Accept	Password Change Accept
Password Change Reject	Positive Query Response	Negative Query Response

This will allow system developers to produce products supporting the service.

1.4 Registered IP Addresses

Users of the service must have registered IP addresses. Further information on this can be found at http://www.ripe.net/ under the services section.

1.5 The EISEC-DB

Access to the EISEC-DB will only be provided by this service for authorised users (EAs) on emergency calls.

The database for EA access (EISEC-DB) will only hold data relating to those customers who have recently made a 999/112 call where the customer takes telephony service from operators whose emergency calls are handled by BT operator services. The information relating to a 999/112 call is only available to EA access for approximately thirty minutes.

The information provided will be in the following order for all Residential and Business fixed telephone lines:-

- Telephone number
- Name
- Location Line 1
- Location Line 2
- Location Line 3
- Location Line 4
- Location Line 5
- Location Line 6

Notes

1. These details will relate to the address to which the telephone line is connected and the name will normally be the customer responsible for renting the line.
2. If the emergency call originates from an extensive private telephone network it **may** break out into the PSTN at a different location from the site of the original call. This will result in a CLI and address being available relating to the building with PSTN access through which the call came, rather than the address at which assistance is required. An “*EXT*” indicator will prefix the Location Line 1 field for such calls to advise call takers to take particular care when confirming address details being given by the caller, and comparing with the EISEC information.
3. For VOIP (Voice over Internet Protocol) users, to allow for the fact that the telephone number is not directly associated with an access line, the *EXT* indicator is also used to advise call takers to take particular care when confirming address details as they may sometimes differ from the normal/default location provided for the telephone number.
4. Mobile Phones will have no associated name and address. Instead location information based on a circle or ellipse centred on a map reference will be returned. Details of field formats returned for mobile calls are shown in the Annex at the end of this document. The caller’s location will be held on the EISEC-DB and will be accessed using the Caller’s CLI.
5. Payphones that are connected to the BT Network will be treated in the same way as Residential and Business lines.
6. Telematics data will be passed via EISEC in a PDU format similar to that used for Mobile except *TMS* will be used to prefix the Location Line 1 field. Additional fields will also be added to communicate vehicle details.
7. eSMS data will use the same format as Mobile data PDUs.
8. eCall will use similar data to Telematics as described in the Interface Protocol Specification.

1.6 Flash

Analogue emergency service circuits provided between BT and the EA allowed the use of a DC signal referred to as Hook Flash, or Time Break Recall, to re-establish communication with the BT operator.

This facility cannot be supported on the ISDN or Corporate SIP Trunking lines used by EAs for EISEC. However, to cater for EAs with ISDN or Corporate SIP accesses and callers with ISDN accesses (especially mobiles), the BT 999 call-handling platform has a timer to look for both parties clearing down. As the calls are held on the BT switch, if either the caller or the EA remains off-hook for a configurable time after one party clears, then the call is represented to the first available Operator as one of the parties may need further assistance.

Transfer of the Call to the Emergency Authority

The caller's CLI will be delivered to the BT switch within call setup signalling messages. This will happen even if the emergency caller has a CLI restriction (CLIR) service.

The BT Emergency Service DataBase (ESDB) ascertains geographically which EA to transfer the call to. The CLI from the call originator will be transferred by the BT Switch to the EA as CLI information. This CLI information will be transferred within the call set-up messages. These messages currently include additional information to the CLI which identifies:-

- Is / Is-not an emergency call.
- Identifier for Call Handling Agency, BT or another Communications Provider.
- Switch Identifier.
- Identifier for individual Operator Service Centre.

This information is known as the W,X,Y,Z information which is included with the CLI information wherever possible.

Zone Data can also be provided in the set-up messages of calls from a mobile network. However, this means is no longer needed nor recommended – more detailed mobile location information is now available through the EISEC-DB.

1.7 WXYZ Values

When a call is extended to an Emergency Authority, BT sends the CLI prefix digits WXYZ, these are detailed below.

W = 999 call indicator, X = Call Handler identifier, Y = Switch identifier, Z = Centre identifier. The W and X data bytes are in both cases one of either of the two codes indicated in the table below

CLI Prefix	DIGIT	Meaning
W	9	Immediate 999/112 call
W	6	NOT Immediate 999/112 call
X	1	From BT
X	?[1]	From another Call Hander
Y	3	See Table 3
Y	4	See Table 3
Y	5	See Table 3
Z	See Table 3	Indicates CENTRE

Table 2 WXYZ Values and meanings.

NOTE:

W will only ever be set to 9 'Immediate 999/112 call'.

X will only ever be set to 1 'From BT'.

The use of WXYZ digits will be discontinued as described in section 1.2.

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[1] The value of this digit will be set by the Communication Provider concerned

1.7.1 Unique Centre Identifier (EISEC) Digits

Note: If for any reason we fall back to our legacy platform we could prefix calls with any of the WXYZ digits within the table below.

Switch	**Operator Centre/RISLU**	**EISEC DIGITS W X Y Z**
Birmingham (Apus)	SPARE	9 1 3 0
Birmingham (Apus)	North Wales	9 1 3 1
Birmingham (Apus)	East Scotland	9 1 3 2
Birmingham (Apus)	SPARE	9 1 3 3
Birmingham (Apus)	England (Midlands)	9 1 3 4
Birmingham (Apus)	Northern Ireland	9 1 3 5
Birmingham (Apus)	West Scotland	9 1 3 6
Birmingham (Apus)	North West England	9 1 3 7
Ilford (Tucana)	SPARE	9 1 4 0
Ilford (Tucana)	North Wales	9 1 4 1
Ilford (Tucana)	East Scotland	9 1 4 2
NGX	**Not specified**	**9 1 4 3**
Ilford (Tucana)	West Scotland	9 1 4 4
Ilford (Tucana)	England (Midlands)	9 1 4 5
Ilford (Tucana)	Northern Ireland	9 1 4 6
Ilford (Tucana)	North West England	9 1 4 7
Manchester (Volans)	North Wales	9 1 5 0
Manchester (Volans)	England (Midlands)	9 1 5 1
Manchester (Volans)	East Scotland	9 1 5 2
Manchester (Volans)	West Scotland	9 1 5 3
Manchester (Volans)	SPARE	9 1 5 4
Manchester (Volans)	Northern Ireland	9 1 5 5
Manchester (Volans)	North West England	9 1 5 6
Manchester (Volans)	SPARE	9 1 5 7

Table 3 Centre Identifiers

Note: The information is shown in decimal.

1.7.2 WXYZ + CLI Digit String

(a) Calls delivered via Basic or primary rate ETSI ISDN will conform with SIN 261[2]; calls delivered via primary rate I.421 will conform with SIN 232[3]. The significant difference being that SIN 261 based calls will be delivered without the leading "0", while calls based upon SIN 232 will have the leading "0" present, as indicated in the relevant standards.

Dependent on the terminating line – whether basic or primary rate, and on whether the exchange is System X or AXE10, then the number of CLI digits will be up to 19, for 15 digit international telephone numbers, though the WXYZ digits may or may not be able to be transmitted as a prefix to the CLI. See also Note 1 below.

(b) The call is presented for ISDN DASS calls as described in BTNR 190, Section 4, para 2.6, with the CLI information as described in BTNR 190, Section 4, Annex 2, Table A2/4 and para 3.2.

This is a variable length field capable of carrying a maximum of 15 digits. The number of digits in the CLI is conveyed in the CLI Digit Count field. Upon arrival at the terminating exchange the CLI is prefixed with a leading '0' or "00" on some exchange types and without the leading "0" or "00" on others, and then passed on to the DASS terminal. If a national call originated from "02072507420" it would be presented to the EA as either "02072507420", or "2072507420", and if an international call originated from 00882396210567890 it will be presented with or without the leading "00".

(c) For calls delivered to EAs using a SIP trunk the format of the number sent to the EA's IP – PBX is to be agreed between the EA and the Access Service Provider of the SIP trunk. **NOTE 1**: For callers using foreign registered mobiles with agreements to "roam" onto UK networks, and for many vehicles using Telematics/eCall technology, the length of the CLI (including a country code) can be between 11- 15 digits (compared to 10 digits for national numbers). This means that, together with WXYZ digits, the CLI digit limits for DASS lines and for ETSI lines for AXE10 exchanges can be exceeded. Dependent on the local telephone exchange and network path for the EA, the CLI received may or may not have a leading 00, and may or may not have the WXYZ digits as mentioned above. This means that EA may receive either:

(a) the international CLI with no WXYZ digits, or

(b) the international CLI with WXYZ digits as a prefix, and there may be a leading 00.

NOTE 2: When analysing the CLI to use for searching the EISEC–DB it is important to:

(a) remove the WXYZ digits from the CLI used to search (WXYZ digits are described in Table 3 above so can always be recognised), and

(b) it is also unnecessary to use leading zeros which should be avoided if possible.

NOTE 3: Always send a search, even if an international number up to 15 digits in length (preferably without any leading 00), as this will allow EAs to obtain location and other data from vehicles using Telematics/eCalls, and also some roaming users with standard handsets can now be located (including AML levels of location)

1.8 Zone Information for Mobile Calls

This section remains in order to illustrate for a DASS line what still happens within the network should the call originate from the BT Legacy platform. Zone Code information is not sent by the new IP based platform as the Zone Code information has been superseded by methods that provide a more granular location of the 999 caller through the EISEC-DB.

The call is delivered as described in section 1.7.2. Following the CLI data is the Mobile Zone or cell id information, this is presented in the Network Address Extension (NAE) field as described in BTNR 190 [1], Section 13, and this format is used as described below.

Zone / cell id information is presented for 999/112 calls originating from mobile networks. If the call did not originate from a mobile network, the field is unpopulated.

This zone / cell id information is sent in the call set-up message as described in section 1.7.2; the format is as follows:-

0xxx	“Vodafone” Zone code
2xxx	“O2” Zone Code
3xxx	“Orange” Zone code
7xxx	“3G UK Ltd” Zone Code

10 digit cell id’s are used by EE.

The leading digits are correct for the mobile operators BT currently deal with, with the 2nd, 3rd and 4th digits indicating the geographic area of the caller. The second third and fourth digits are provided by the mobile networks who can provide information on the geographical significance of the zone codes for their coverage area.

The most significant digits are sent first, subsequent digits are sent in successive fields.

Zone Data	First digit
Zone Data	Second digit
Zone Data	Third digit
Zone Data	Fourth digit

10 digit cell ids are comprised of the first five digits as Location Area Code and second five digits relating to the individual cell identifier.

NOTE: Emergency Services will unfortunately not be able to see the 10 digit cell id’s in full due to limitations of the Network Address Extension (NAE) field.

Experience has shown that where DASS circuits are in use and NAE is enabled on the customer premises equipment, this can cause 999 calls to fail on arrival. It is recommended that EAs/ EISEC developers check their CPE and if necessary, disable NAE in these circumstances.

System Security

BT attaches particular importance to the security of its electronic information and will ensure that policies and procedures are established and documented to protect these assets. BT will limit the risk of unauthorised access by ensuring that:

- access to electronic information is established and maintained at a level that is operationally required for users to discharge his/her responsibilities,
- access is reviewed on a regular basis
- all legal and regulatory requirements are fulfilled
- compliance with the applicable requirements of the Privacy and Electronic Communications rules published by the Information Commissioner’s Office (UK based systems) is maintained.
- compliance with the Computer Misuse Act 1990 is maintained.
- EAs granted access to electronic information will be forwarded a copy of the BT EISEC Security Policy. This outlines the access rights and responsibilities to protect information in accordance with BT UK Security Policy. EAs must abide by all statements within this policy and failure to do so may result in access being withdrawn.

1.9 Security Requirements for EAs

Password Security

Users of the service must conform to BT’s Policy relating to Password Security. EAs must change their passwords every 90 days; the system will force users to change passwords. A check history of passwords used in the last twelve months is maintained to prevent re-use. If passwords are included within automated logon sequences they must be stored using encryption.

New Users

An initial password will be allocated to users but once they log on to the EISEC-DB they will be required to change the password.

Password Resets

If a password reset is requested then a temporary password will be issued. When the user logs on to the system for the first time (after the reset) they will be required to change the password.

Retrieving EISEC-DB Data by the EA

Full detail of the protocol used between the EA system and the server is given in the annex. This section gives an overview of that detail.

All transactions are carried out by use of a PDU. The relevant types are outlined below; depending upon use they may be stand-alone instructions (poll request) or require a degree of interaction handling fixed and variable length fields. The structure of the messages are detailed in the annex.

1. Usernames have a maximum of eight alphanumeric, minimum of six characters. These characters are not case sensitive.
2. Passwords have a maximum of twenty-four ASCII characters from a defined set, minimum of six characters. These characters are case sensitive.

3. Location Query data. This data will be transferred automatically to the EISEC-DB access area of the server as the 999/112 call is processed by the BT Operator. The EA will therefore only be able to access name and address data for customers who have made a recent 999/112 call. Following a 999/112 call the customer data will be held on the EISEC Server machines for a period of approximately thirty minutes, during which it will be available for access by the EA.

Resilience

The EISEC Server uses the TCP/IP protocol to provide reliable transport for the message PDUs. A single TCP/IP port number is defined for each EISEC Server that provides the connection point to that EISEC Server.

For an Emergency Authority system to access the EISEC Server it must first initiate a successful TCP/IP connection.

More than one EISEC Server is provided for the Emergency Authorities to use. An Emergency Authority can connect to one or more EISEC Server, but a second connection to the same EISEC Server will cause the termination of the first connection, providing the username and password are correct.

References

[1]	BTNR 190; (1992)	Digital Access Signalling System No 2 (DASS 2) PBX Interface. Volumes one & two.
[2]	SIN 261	BT ISDN 2e and ISDN 30 (I.421) Service using full ETSI call control – Service Description.
[3]	SIN 232	BT ISDN 30 (I.421) – National Service – Service Description.
[4]	ND1034	UK SIPconnect Endorsement
ANNEX	2258/ISP/001; Issue 1.9	Interface Protocol Specification for EISEC Server.

SINs are available from https://www.bt.com/about/sinet

History

Issue 1	November 1999	STIN Issued
Issue 1	October 2001	SIN First Issued
Issue 1.1	November 2001	Editorial update, and Issue 1.5 ISP added,
Issue 1.2	September 2002	Updated to reflect new EISEC System Security requirements, and Issue 1.6 ISP added.
Issue 1.3	March 2003	- Updated to include expansion of EISEC to pass location information for emergency calls from mobile phones. Annex 1.8 added. - Approval Requirements section removed, information now available via SINet Useful Contacts.
Issue 1.4	October 2003	- Updated to clarify the zone code information with the introduction of Mobile Location Data. - WXYZ Values updated. - IPSpec Issue 1.9 added.
Issue 1.5	May 2007	Contact for further information updated in clause 3.
Issue 1.6	November 2008	General review of document. Addition of Telematics information.
Issue 1.7	August 2009	Updated the Unique Centre Identifier (EISEC) digits for the Glasgow centre and amended the Mobile Operator Name for 3G UK Ltd (formerly 3UK/Hutchison 3G (3)).
Issue 2.0	October 2009	Aligned Issue numbers between document and annex, and Added Wireless Car to list of TelematicsEDSPS in the Annex to SIN 278, section 4.7.1.3 Table 10
Issue 2.1	January 2011	Added Peugeot Citroen Car to list of Telematics EDSPs in the Annex to SIN278. Updated the WXYZ values to accommodate new data centres.

Issue 2.2	July 2014	Updated the WXYZ values to reflect the current data centres. Updated section 1.2 EISEC Process regarding call delivery. Updated section 1.8 to include 10 digit cell id information. Updated the list of Mobile Operators to include EE (T Mobile) and amend the name of Mapesbury Mobile to Mundio. Updated to clarify that EISEC user passwords are case sensitive and removed the reference to passwords needing to begin with an alpha character. Updated to include Corporate SIP (SIP Trunking). Updated to include Pico Cell Addresses in fixed line format. Updated section 4.7 regarding improced precision data. Updated section 4.3 relating to ISDN users logging off. Updated sinet helpdesk email address and sinet URL.
Issue 2.3	February 2016	Updated Introduction Section. Updated section 1.1 Emergency Call Handling Overview section. Updated 1.2 the EISEC process section to include VoIP. Updated 1.5 The EISEC-DB to remove section relating to Licensed Operator calls. Updated 1.6 Flash section to include reference to Corproate SIP Trunking lines. Updated 1.7 WXYZ values to reflect Centre changes and definition of X digit.
Issue 2.4	December 2017	Updated 1.7.1 Centre Changes Inclusion of eCall Inclusion of additional information on managing international CLIs used for many Telematics Calls, by foreign roaming mobile callers and on many eCalls. Clarification of limitations of different exchange technologies Notification of withdrawal of use of WXYZ digits when 999 platform changes.
Issue 2.5	April 2019	Deleted reference to Mundio (formerly Mapesbury Mobile) Editorial changes to text Change of date for withdrawal of WXYZ digits.
Issue 2.6	July 2019	Section 4.7 – Updated EDSP Names in Table 10 Location Data Attributes for Mobile and Telematics Calls within. Traffic Master updated to show Teletrac Navman, Peugeot Citroen updated to show PSA/IMA and Mondial to show Allianz.
Issue 2.7	September 2020	Change SINet site references from http://www.btplc.com/sinet/ to https://www.bt.com/about/sinet

Issue 2.8	October 2020	Update to list of terms and abbreviations. Contact Details updated. Updated reference to EISEC Client to EISEC Server throughout. Section 1.2 – Note 2 – Change of date for withdrawal of WXYZ digits. Section 1.3 – Updated Service Schematic Diagram and wording. Section 1.5 – Updated the varying type of Emergency Calls. Section 1.7 – Change of date for withdrawal of WXYZ digits. Section 1.7.1 – Renamed Operator Centre West England to read North West of England and removed reference to (2) note. Section 1.9 – Updated the Retrieving EISEC-DB Data by the EA section and removed the reference to connectivity from a different IP address.
Issue 2.9	January 2023	Contact Details updated. Section 1.2 – Note 2 – Update to the use of WXYZ digits. Section 1.3 – Update to the wording to reflect BT's new 999 call handling platform. Section 1.7 – Update to the meaning of the Y Digits and an update as BT have moved to a SIP based platform. Section 1.7.1 – Update to the Unique Centre Identifiers to include the WXYZ for the new SIP platform. Section 1.7.2 – Part of point a) extracted and point c) created. Further update to the WXYZ digits added to Note 2. Section 1.8 – Update to the Zone Code information for DASS lines.
Issue 2.10	February 2024	Contact Details change. Section 1.9 – Updated the password change frequency.

-END-

Annex to SIN 278 - Interface Protocol Specification for EISEC Server.

Interface Protocol Specification

For

EISEC Server

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Change History

Issue Date	Issue No.	Change Description
23/10/97	1.0	First issue.
10/11/97	1.1	Minor changes following comments from BT.
27/11/97	1.2	Royal blue copyright replaced by BT copyright. Minor changes.
01/12/97	1.3	Minor style and editorial changes for use with SIN 278 Issue 1
19/06/00	1.4	Detail for PDU polling timeout functionality added.
20/06/00	1.5	Detail for poll timeout setting facility added.
23/08/02	1.6	Changes as a result of introduction of new BT EISEC System and Security Requirements.
16/02/03	1.7 (Internal Draft)	Added advanced location information for mobile and Telematics calls. Changed existing “Name and Address” references to “Location”. Updated table numbers to be consistent. Distributed for internal BT review.
26/02/03	1.8	Updated with comments from internal BT review on 26/02/03.
19/09/03	1.9	The time/date value within the IPS has been clarified.
04/11/08	1.10	Added new formats to support integration of Telematics service.
02/10/09	2.0	Updated Issue list to 2.0, Added Wireless Car to list of Telematics EDSP’s in Annex to SIN 278, Section 4.7.1.3 Table 10. All further changes will be recorded in the main body of the document
05/01/11	2.1	Added Peugeot Citroen Car to list of Telematics EDSPs in Annex to SIN278. Updated the WXYZ values to accommodate new data centres.
03/07/14	2.2	Updated to show that the password is case sensitive and removed reference to passwords needing to start with an alpha character. Update section 4.7 to clarify re-query process. Updated MLO Names in Table 7. Updated Message Content section reference within section 4.7.

06/01/16	2.3	Updated the definition of direction for Telematics as interface allows 0 to 359 degrees (Table 10 Location Data Attributes for Mobile and Telematics Calls). Updated Table 10 Location Data Attributes for Mobile and Telematics Calls to include ESDPs OnStar and RealRider.
November 2017	2.4	Updated Table with eCall
April 2019	2.5	Information on importance of Re-query function with increased availability of AML added to section 4.7. Some minor formatting changes made to the text of section 4.7.1.3.3
July 2019	2.6	Section 4.7 - Updated EDSP Names in Table 10 Location Data Attributes for Mobile and Telematics Calls within. Traffic Master updated to show Teletrac Navman, Peugeot Citroen updated to show PSA/IMA and Mondial to show Allianz.
September 2020	2.7	Change SINet site references from http://www.btplc.com/sinet/ to https://www.bt.com/about/sinet
October 2020	2.8	Updated reference to EISEC Client to EISEC Server throughout. Section 2.3 - Updated the reference to connectivity from a different IP address. Section 3.2 - Updated the Location Query Request PDU Structure definition. Section 3.3 - Updated User Name, Operator password and Logon reject code within the PDU Encoding table. Section 4.1 - Updated the reference to connectivity from a different IP address. Section 4.6 - Updated to reference 30 minute expiry for emergency call location details. Section 4.7 - Updated to reference 30 minute expiry for Telelmatics call location details as well as the diagram and value for improved precision on mobile calls. Updated various attributes within Table 10 Location Data Attributes for Mobile and Telematics Calls. Updated Glossary
January 2022	2.9	Document formatting changes to section 4.7.6

February 2024	2.10	Section 4.6 – Updated to include details for calls originating from an Underground Railway System. Section 4.7 – Updated the date for the percentage of precision data availability. Section 4.7.3 – Updated the Address attribute detail to include underground cells. Section 4.7.3 – Updated the EDSP attribute details to remove inactive Emergency Data Service Providers. Also updated the AB QP PDU Field value as the EDSP reference was incorrectly formatted within the document.

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1 Introduction

1.1 General

This document contains a definition of the protocol to be used by Emergency Authority systems when communicating with the Enhanced Information Service for Emergency Authorities (EISEC) Server. The EISEC Server is a system supplied by BT that enables emergency authorities to access location information that relates to emergency calls received by BT operators.

1.2 Purpose of Document

The purpose of this document is to enable Emergency Authorities to implement systems that can interface to the EISEC Server to retrieve location information.

1.3 Intended Audience

This document should be read by any interested parties who will be implementing systems that are required to retrieve information from the EISEC Server.

Some familiarity with the TCP/IP protocol is assumed.

2 Overview

2.1 General

This document describes the Protocol Data Units (PDUs) that comprise the session and application layer messages of the EISEC Server protocol. These messages allow logon and request operations to be performed.

2.2 Protocol Data Units (PDUs)

Emergency Authority systems shall send their data requests in the form of PDUs (Protocol Data Units), which will be interpreted by the EISEC Server. Responses from the EISEC Server are transmitted as response PDUs to be interpreted by the requesting Emergency Authority system.

2.3 TCP/IP

The EISEC Server protocol uses the TCP/IP protocol to provide reliable transport for the message PDUs. For an Emergency Authority system to access the EISEC Server it must first initiate a successful TCP/IP connection. Once done, a logon session is established with the EISEC Server, over which the location requests may be made.

A single TCP/IP port number is defined for each EISEC Server that provides the connection point to that EISEC Server. More than one EISEC Server system is provided for the Emergency Authorities to use.

An Emergency Authority can connect to one or more EISEC Servers. But a second connection to the same EISEC Server will cause the termination of the first connection, providing the username and password are correct

3 PDU Structure

3.1 Framing

All PDUs will be framed to allow identification of the start and end of the PDU as follows:

Octet	1	2	3	4	5	6	7	*Any number of Octets from 0 to 9999*	Last
	STX	Application PDU Length				Type		Application PDU	ETX

Application PDU Length

where:

STX and ETX	are the ASCII start and end transmission characters.
Application PDU length	is an integer number representing the length of the PDU, less the start and end framing characters and the 4 character length field. The Application PDU Length field is encoded as ASCII digits, most significant number first padded with leading ASCII zero characters to 4 characters in all.
Type	two ASCII characters defining the type of PDU, see section 3.2.
Application PDU	the structure of the Application PDU depends on the PDU type, see section 0 3.2.

3.2 Application PDU

General

The structures of all types of Application PDU are shown below in Table 4:

Description	PDU Type	PDU Structure	
Logon Request	LR	User Name	Password
Password Change Request	PC	Old Password	New Password
Location Query Request	NQ	Request Number	Telephone Number field
Timeout Set Request	TS	Timeout Value	
Logoff Request / Response	LO		
Poll Request / Response	PO		
Logon Reject Response	LJ	Logon reject code	
Logon Accept Response	LA		
Grace Logon Accept	LG	Grace Logons	
Password Change Accept	PA		
Password Change Reject	PJ	Password reject code	
Timeout Set Accept	TA		
Timeout Set Reject	TJ		
Positive Query Response	QP	Request Number	Request data fields
Negative Query Response	QN	Request Number	Request error code

Table 4 PDU structures.

Structure of Request Data Fields

The data fields in the query requests and responses are encoded as either fixed (F) or variable (V) length fields.

Fixed length fields are left justified and space padded. Each data field is preceded by a two ASCII character field type, as shown below:

Field type	Data field

Variable length fields are preceded by a field type, as above, and a field length. The length is an integer length of the following data encoded as a fixed length field of 3 ASCII numeric digits. The digits are right justified with leading zeros. Variable length fields are encoded as below:-

Field Type	Field length	Data field

Please note that if the field length is 0 there will be no data field.

3.3 PDU Encoding

Encoding of PDU fields

The following table describes the contents of the PDU fields shown in Table 4.

Control Field Name	**Encoding**
User Name	Maximum length of 8, left justified in an 8 character field and can contain any printable ASCII characters. Trailing filler characters shall be inserted as ASCII spaces. User names must be at least 6 characters. The user name is not case sensitive.
Operator password	Maximum length 24, left justified in a 24 character field, can contain any alpha-numeric character and any of the following punctuation characters: ! # $ % & ( ) + - : ; = < > ? _ ' ~ \ [ ] { } | ^ ,. Trailing filler characters shall be inserted as ASCII spaces. Passwords must be at least 6 characters. Passwords are case sensitive and must contain at least one numeric character.
Logon reject code	A Single ASCII numeric character with the following meanings: 1 Invalid User name or Password. 2 The User is already logged on. Only a single logon session is allowed for each user to an EISEC Server. 3 System failure (A temporary fault has prevented the logon). 4 The user is barred from the system. A user is barred from the system when all of the grace logins have been used following the expiry of the user's password. A user can only be un-barred by the BT administrator. 5 The user is locked out from the system. A user is locked out from the system following three successive failed log-in attempts or after 30 days without logging in. The user can only be un-locked by the BT administrator.
Password reject code	A Single ASCII numeric character with the following meanings: 1 Invalid Password supplied or the "old" password supplied was incorrect when changing passwords. The passwords have a minimum length and must contain ASCII characters 2 Invalid Password supplied, the password appears on the history list of previously used passwords. 3 The User is not logged on, and so cannot change their password. 4 System failure (A temporary fault has prevented the password change).

Control Field Name	**Encoding**
Request Number	2 ASCII numeric digits left padded with ASCII zeros. The contents of this field should be unique for each outstanding transaction. It is returned with the query responses to enable the Emergency Authority systems to match responses to queries. It is recommended that Emergency Authorities use a simple incrementing counter that cycles round to populate this field.
Grace Logons	A single ASCII numeric character. This indicates the number of logons left before the user is barred from the system, because their password has expired.
Request error code	2 alphanumeric characters having the following meanings: 01 No matching records on the database could be found for the supplied telephone number. 02 Database temporarily unavailable. 03 Duplicate Request Number. The query received has a request number that matches that of an outstanding query on this session. 04 Incorrect PDU Framing. The STX/ETX or PDU length is missing or incorrect. 05 Unrecognised PDU Type. The PDU type specifier has not been recognised. 06 Unrecognised Fields in query. The query message contains field types that are unrecognised. 07 No user logged on. A message was received which requires there to be a logon session in progress to be able to process it. 08 Too many requests. There are already the maximum number of requests outstanding on this session.
Timeout value	5 ASCII characters containing numeric digits (0-9) and spaces only. The numeric digits are left aligned and represent the number of seconds to set the PDU timeout to. The valid range is 0 – 36000. Leading zeros are allowed but are ignored.

Table 5 Encoding of the control fields within the PDUs.

3.4 Encoding of Request Data Fields within PDUs

The following table shows the field types used in the request data fields. It describes the field size, if it is fixed (F) or variable (V) length, how it is encoded and the field type specifier.

Field Description	Size	Encoding	Type Specifier
Telephone number	20 (F)	ASCII alphanumeric characters	TN
Name	56 (V)	ASCII alpha characters	NA
Location line 1	35 (V)	ASCII alphanumeric characters	AA
Location line 2	35 (V)	ASCII alphanumeric characters	AB
Location line 3	35 (V)	ASCII alphanumeric characters	AC
Location line 4	35 (V)	ASCII alphanumeric characters	AD
Location line 5	35 (V)	ASCII alphanumeric characters	AE
Location line 6	35 (V)	ASCII alphanumeric characters	AF

Table 6 Encoding of the data fields contained within request data fields.

4 PDU Usage

4.1 Logging In

To log a user onto the Server, the Emergency Authority System will initiate a successful TCP/IP connection to the EISEC Server, and then send a Logon Request PDU.

Following a successful TCP/IP connection, the EISEC Server will expect to receive a Logon Request PDU. If any other PDU (including invalid ones) is received prior to a Logon Request, the TCP/IP connection will be closed.

Note: Password Change and NAA Query requests will receive Reject Responses prior to the TCP/IP connection being closed.

Following a successful TCP/IP connection, the EISEC Server will expect to receive a Logon Request PDU within a designated time period. If a Logon Request is not received within this time period, the TCP/IP connection will be closed.

The EISEC Server will respond with a Logon Accept Response PDU if the logon is successful. A Logon Reject Response PDU will be sent if the logon is not successful. The errors that can be returned are detailed in Table 5 under the 'Logon reject code' field.

If this is the first correct logon after the user’s password has expired, the EISEC Server will respond with a Grace Logon Accept message. This is a successful logon, which indicates the number of grace logons that are left. If the password is not changed before the grace logon attempts are exhausted, the user will be barred from the system.

Three successive failed logon attempts will result in the user being locked out from the system. The resetting of barred and locked out users can only be done by the BT administrator.

Only one Logon connection will be maintained per user. In the event that a subsequent, successful Logon is received for a user, the previous outstanding connection for that user will be closed, i.e., the most recent session is treated as the valid logon.

4.2 Changing Passwords

The user password may be changed at any time after a successful logon, by sending a Password Change Request. The EISEC Server will respond with a Password Change Accept Response PDU if the change is successful. The EISEC Server will then synchronise the new password across all the other EISEC Servers. Note – The synchronisation can be done on any EISEC Server.

A Password Change Reject Response PDU will be sent if the change is not successful. The errors that can be returned are detailed in Table 5 under the ‘password reject code' field.

The EISEC Server maintains a password history for each Emergency Authority user. The EISEC Server will not allow the reuse of a password within a 12 month period.

4.3 Logoff

To log out a User the Emergency Authority System will send a Logoff PDU to the EISEC Server. The Server will respond with a Logoff PDU and close the IP connection. Logoff requests are always successful.

Outstanding data requests will not prevent an Emergency Authority System from logging off; they will be discarded. Special attention should be given to instances where ISDN is being used. ISDN will disconnect the network if no traffic is being passed from the EA to EISEC after a pre-configured timeout. In such circumstances EISEC will require the EA to login again when the connection is re-established even if no explicit logoff message has been sent. In such circumstances the EA should consider introducing a log off message if a quiet period occurs.

4.4 Poll

A polling facility is available between the EAs and the EISEC Servers which may be configured On or Off. If EAs wish to use polling they will need to develop their system to the agreed PDU definition (sections 0 refers) and configure the desired timeout. (Section 4.5 refers).

To use polling the EA must initially configure polling ON and subsequently their system must issue Poll PDUs after successfully logging on, to ensure the reliable handling of a network link failure. The Poll PDU has to be sent at regular intervals unless any other PDU message is sent. The EISEC Server will answer with a response Poll PDU. The EISEC Server expects a PDU from the EA system within the specified time frame otherwise it will terminate the link.

4.5 Setting Link Usage Timeout

If polling is being utilised, the EISEC Server will terminate a TCP link between it and an EA Server if no PDUs are received within a specified timeframe. Any logged on user over such a link will be logged off from the EISEC Server. This functionality is necessary to enable logging off of users in the event of a physical network failure (such failures are not reliably detected by the TCP/IP protocol).

A facility is provided to enable each EA user to set their own polling timeout value over their own TCP/IP link. This is achieved by sending a ‘Timeout Set’ request PDU with the required timeout value once the user has been logged on. This value is specified in seconds and has a maximum value of 36000 (10 hours). The EISEC Server responds with a ‘Timeout Set Accept’ PDU if the request was successful or a ‘Timeout Set Reject’ PDU if an invalid value was supplied.

In order to use polling, the ‘Timeout value’ can be set at any time over a successfully logged on connection. The EA user’s client software must set its own timeout value with a PDU ‘Timeout Set’ request once they are successfully logged on. To maintain a link to the EISEC Server, an EA user’s client software must ensure the time between any two consecutive request PDUs never exceeds the specified timeout value. When no user data request is appropriate (e.g. NAA request), a poll request PDU must be sent instead.

4.6 Location Query Request for Fixed Line

Once an Emergency Authority System has successfully logged on it may make requests for data by sending a Location Query Request PDU to the EISEC Server. If the query is for a fixed line phone that has made an emergency call to BT in the last thirty minutes the Server will respond with a Positive Query (QP) Response PDU containing name & address data.

A Negative Query Response PDU is returned by the EISEC Server when it has been unsuccessful in obtaining the information. The errors that can be returned are detailed in Table 5 under the 'Request error code' field.

It is possible to send a Location Query Request PDU before receiving the response to a previously sent location request. Query responses will be returned in the order they are received. The request number field, set when the Emergency Authority sends the request, may be used to match responses to requests.

Location QP PDU Format for fixed line

The QP PDU for fixed line contains Name and Address data. The request/response query fields are as follows:

Request from Emergency Authority,	NQ, Request No.,	TN, telephone number
Positive Response from EISEC Server,	QP, Request No.,	TN, telephone number, NA, field length, Name, AA, field length, Address line 1, AB, field length, Address line 2, AC, field length, Address line 3, AD, field length, Address line 4, AE, field length, Address line 5, AF, field length, Address line 6 + postcode

Note that the postcode will always be put in the AF field, even if earlier fields are empty. The AF field may contain address information as well as a postcode.

In some cases the text “**PICO CELL**” can appear in the NA name field. This indicates that the call originated from mobile network with a small coverage area, typically the size of a building. The address fields will contain the address and also possibly a business name for the location.

In some cases the text “**UNDERGROUND**” can appear in the NA name field. This indicates that the call originated from an Underground Railway System (*only London Underground at present).*

4.7 Location Query Request for Mobile/Telematics

If the Location Query Request (NQ) PDU to EISEC is for a mobile phone or a telematics system which has made an emergency call within the last thirty minutes, EISEC will respond with a Query Negative (QN) PDU, or a Query Positive (QP) PDU.

If a negative (QN) PDU is returned by EISEC then it has been unsuccessful in obtaining the information. The errors that can be returned are detailed in Table 5 under the 'Request error code' field. A “**No Match**” message is represented by a Negative Query Response (QN) PDU with request error code of 01.

The mobile Positive Query (QP) response will have one of three possible states, either **Searching**, **Data Available** or **Unsupported MLO**.

A “**Searching**” message indicates a location request has been sent to an MLO and EISEC is waiting for a response. The EA system should then wait for a period of time and re-query EISEC. A suggested wait period is also included in this message.

An “**Unsupported MLO**” message indicates that a 999 call has been made for this CLI but there is no location service available from this MLO.

A “**Data Available**” message gives the location data in a GIS based format.

These three QP messages will be differentiated by the values of their status attribute, which is discussed later.

All messages except the default “No Match” message will have an associated timeout after which a query on a CLI will return a “No Match” (QN) response. The “Searching and “Unsupported MLO” will have the same timeout, which will be in the order of a few minutes. The “Data Available” message timeout will be the same as for current fixed line data, approximately 30 minutes.

Some MLO networks will have the ability to provide improved location information but only after a delay. It is also possible to receive Telematics data with improved location data following an initial mobile data message or in some cases only Telematics data may be received. To accommodate the fast and the improved location data there may be more than one “Data Available” message posted to EISEC per emergency call. The first message will provide the Emergency Authorities with the fast, less precise location information. Subsequent “Data Available” messages will provide the slower more precise location information. If improved location data is expected the initial “Data Available” message will contain a suggested wait period. Improved “Data Available” messages will overwrite the previous message for that particular CLI.

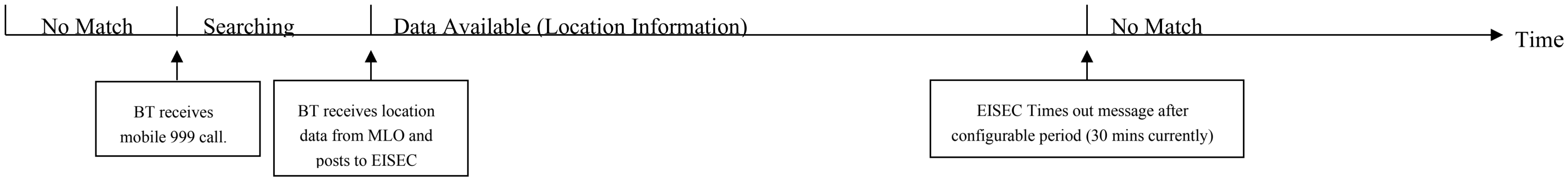
The location search process for mobile/Telematics devices starts as soon as BT receives the emergency call as opposed to when the call is connected to the EA. It is therefore possible that the location information will be available when the EA places their first search query to EISEC, in which case no “Searching” message will be seen and the system will respond with a “Data Available”.

Improved precision data is gradually becoming available for mobile callers – at time of this update (February 2024) it has reached 80% of mobile calls. In order to benefit from this, it is very important that EA systems act on any re-query delay value present in the Data Available message.

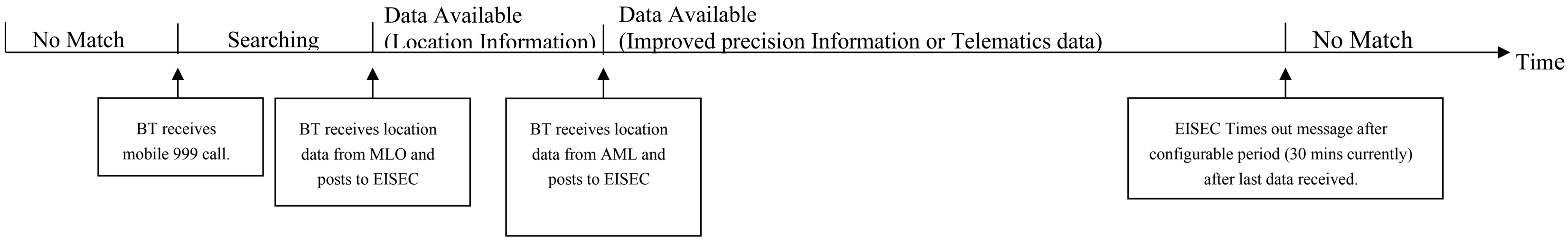
As with fixed line, it is possible to send a Location Query Request PDU before receiving the response to a previously sent location request. Query responses will be returned in the order they are received. The request number field, set when the Emergency Authority sends the request, may be used to match responses to requests.

The following diagram shows how these timeouts will work in various scenarios.

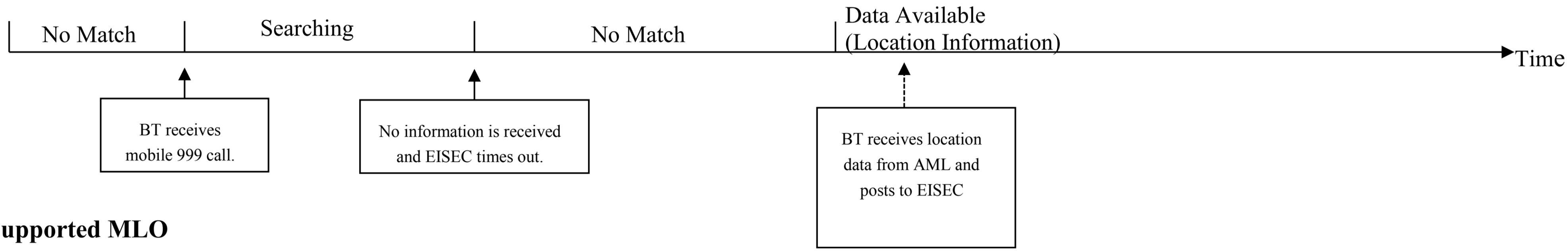
Successful Search.


No Match
Searching
Data Available (Location Information)
No Match
Time
BT receives mobile 999 call.
BT receives location data from MLO and posts to EISEC
EISEC Times out message after configurable period (30 mins currently)

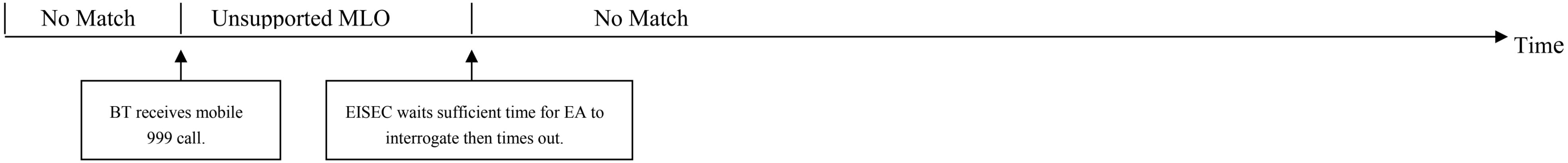
Successful Search with additional accurate update.


No Match
Searching
Data Available (Location Information)
Data Available (Improved precision Information or Telematics data)
No Match
Time
BT receives mobile 999 call.
BT receives location data from MLO and posts to EISEC
BT receives location data from AML and posts to EISEC
EISEC Times out message after configurable period (30 mins currently) after last data received.

Unsuccessful Search.


No Match
Searching
No Match
Data Available (Location Information)
Time
BT receives mobile 999 call.
No information is received and EISEC times out.
BT receives location data from AML and posts to EISEC

Unsupported MLO


No Match
Unsupported MLO
No Match
Time
BT receives mobile 999 call.
EISEC waits sufficient time for EA to interrogate then times out.

Message content.

The “Searching”, “Unsupported MLO” and “Data Available” QP messages will contain some common attributes. These common attributes are described in Table 7 below.

The Mobile and Telematics interfaces on EISEC were introduced some time after the fixed line interface. In order to minimise re-development costs for the Emergency Authorities the fixed line name and address fields have been re-used for Mobile and Telematics data. For Mobile/Telematics data the name and address fields have been further divided into attribute fields. These attribute fields will always start in the same position within the name or address line.

As a general convention any information that does not fill the entire Mobile/Telematics attribute field will be left justified and padded with spaces unless otherwise stated in the attribute description.

Any variable length Name or Address Data Fields (i.e. NA and AA to AF) will be sized to hold the available attribute fields only. The final attribute field in the name or address line will be truncated if the whole field is not used. This is consistent with the field length description in Section 3.2 and developers should continue to extract the Name and Address fields from the PDU using the field length value.

If the MLO sends incomplete data (missing mandatory data) then a best effort approach will be taken and all data received will be posted onto EISEC. Missing data will be padded with spaces. Attributes within the QP PDU will be delimited with commas.

Attribute Name	**Attribute Length (in bytes)**	**Attribute Description**
Mobile CLI	20	The Calling Line Identifier (phone number) of the mobile that the location information related to.
MLO Name	15	Consists of a prefix indicator and the MLO the emergency call originated from. The prefix will be "*MOB*" or "*TMS*". "*MOB*" indicates the data was received from the MLO's Gateway Mobile Location centre (GMLC) or AML (Advanced Mobile Location) and will be formatted as mobile data. "*TMS*" indicates the data was received from a Telematics system. The MLO Name will follow the prefix and will be the commercial trading name of the mobile network operator not the reseller. Examples of the MLO Name will be: "Vodafone" "O2" "3G UK Ltd" "EE" There will be a single space between the identifier and the MLO Name, e.g. "*MOB* Vodafone". It is possible for an emergency call to be data only; this is where an emergency data message is received without an accompanying voice call. In this case no MLO Name will be posted as this data is only pertinent to voice calls.
SL digit	2	The SL digits provide signalling data about the call, SL (Service and Language) have special values for an emergency call, these are 99 for a 999 call and 98 for a telematics based call (including eCalls). Note that 998 calls will be sent to the MLO's GMLC for location data. It is therefore possible for data to be presented with SL = "98", but the MLO Name attribute will start with a "*MOB*". This means the MLO Name prefix should be used to interpret the formatting of the message and not the SL digits. It is possible for an emergency call to be data only; this is where an emergency data message is received without an accompanying voice call. In this case no SL information will be posted as this data is only pertinent to voice calls.

Attribute Name	Attribute Length (in bytes)	Attribute Description
Time/Date	14	The Time and date attribute has a different meaning depending on the message type as explained in the individual message descriptions. This all numeric attribute has the format "YYYYMMDDHHmmss" and represents a local (daylight saving) date / time where YYYY is year, MM is Month (01-12), DD is date (01 – 31), HH is hours (00 – 23), mm is minutes (00 - 59), ss is seconds (00 – 59).
Status Code	2	The status code is a numeric code (represented in ASCII) to indicate the type of message being communicated. It can take the following possible values. "0" – Data Available "1" – Searching "2" – Unsupported MLO This attribute is 2 digits in length to allow for future enhancements.
Status Text	15	Status Text is a textual representation of Status Code for use by EA systems that just display the data without interpretation. Possible values for status text are: "Searching", "Data Available" and "Unsupported MLO" these values will always match their associated status code.
Re-query Delay	3	This attribute gives a time delay in seconds. The time delay is the recommended period of time the EA system should wait before attempting to re-query EISEC. This attribute is not present in the "Unsupported MLO" message.

Table 7 QP Attributes for mobile data.

4.7.1 “Searching” Message

The “Searching” message will contain the following attributes in the QP PDU. We have placed all the non-location information in a single line for convenience.

QP PDU Field Name	QP PDU Field Length	Proposed Mobile Attributes (attribute lengths).	Total Number of characters used **(inc commas)**.	Number of spare characters
TN	20	Mobile CLI (20). The format of the CLI will be the same as the fixed line query.	20	0
NA	56	Mobile Licensed Operator Name (15) SL digits (2) Date/Time message posted (14) Status Code (2) = “1” Status text (15) = “Searching” Re-query Delay (3)	16 3 15 3 16 3 -------------- Tot: 56	0
AA	35		0	35
AB	35		0	35
AC	35		0	35
AD	35		0	35
AE	35		0	35
AF	35		0	35

Table 8 “Searching” QP PDU field descriptions.

An example of the QP PDU attributes in a “Searching” message is shown below in Figure 2. Fields AA to AF will be empty (PDU Data field length of zero).

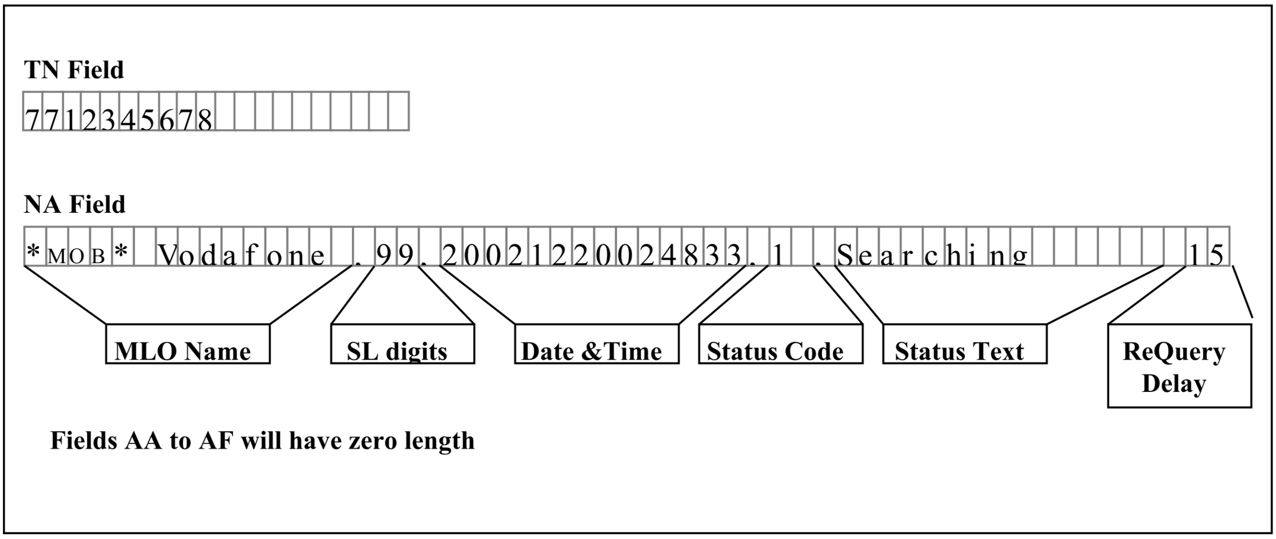

TN Field
7712345678
NA Field
MOB Vodafone , 99, 20021220024833, 1 , Searching 15
MLO Name
SL digits
Date &Time
Status Code
Status Text
ReQuery Delay
Fields AA to AF will have zero length

Figure 2 QP PDU Format for “Searching” Message.

4.7.2 “Unsupported MLO” Message

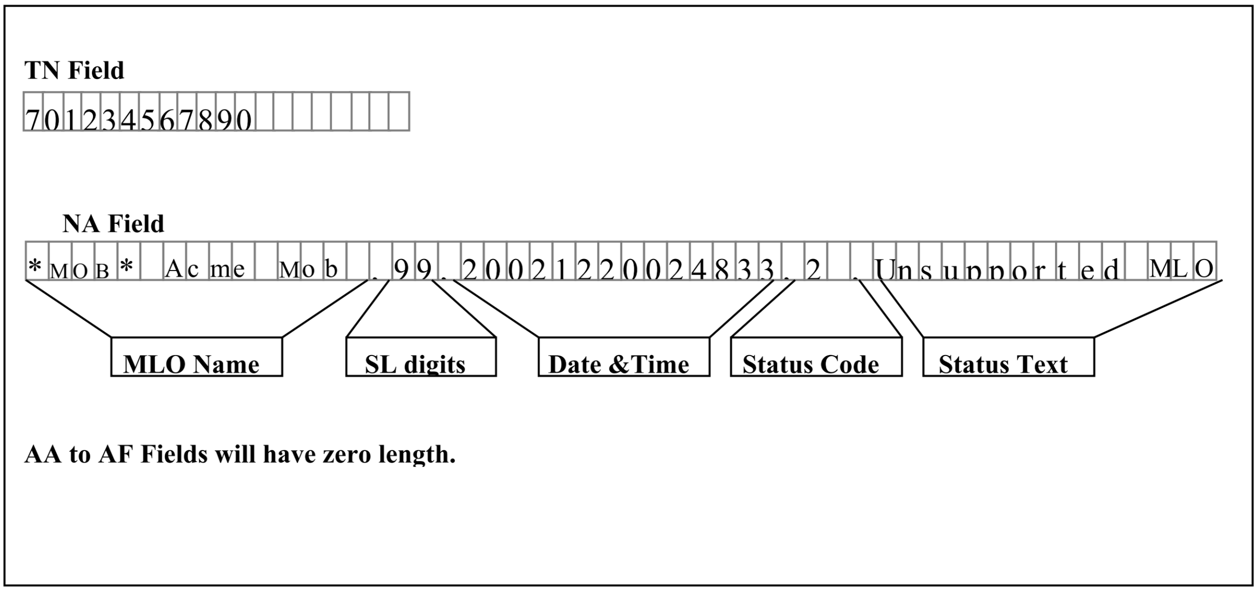
The “Unsupported MLO” messages will contain the following attributes in the QP PDU. The format of this message is identical to the “Searching” message except the Re-query delay attribute is not present.

NAA Field Name	Field Length	Proposed Mobile Attributes (attribute lengths).	Total Number of characters used (inc commas)	Number of spare characters
TN	20	Mobile CLI (20)	20	0
NA	56	Mobile Licensed Operator Name (15) SL digits (2) Date/Time message posted (14) Status Code (2) = “2” Status text (15) = “Unsupported MLO”	16 3 15 3 15 ------------- 52	4
AA	35		0	35
AB	35		0	35
AC	35		0	35
AD	35		0	35
AE	35		0	35
AF	35		0	35

Table 9 “Unsupported MLO” QP PDU field descriptions.

An example of the QP PDU attributes in an unsupported MLO message is shown below in Figure 3. Fields AA to AF will be empty (PDU Data field length of zero).

Figure 3 QP PDU format for “Unsupported MLO” Message

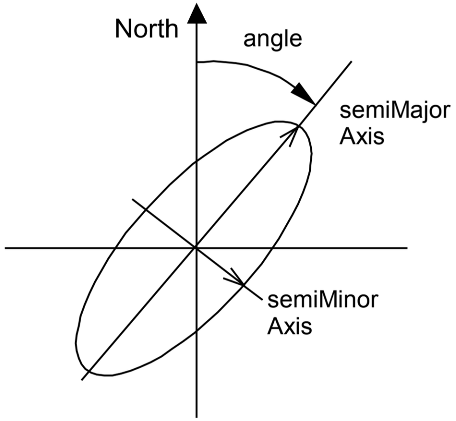

TN Field
70123456789 0
NA Field
MOB Acme Mob .99.20021220024833.2 .Unsupported MLO
MLO Name
SL digits
Date &Time
Status Code
Status Text

AA to AF Fields will have zero length.

4.7.3 “Data Available” Location Information Message Attributes

The “Data Available” message will contain location information, based on map reference that will be received from the MLO’s Gateway Mobile Location Centre (GMLC). Some MLO’s will have the ability to pass limited address information as well as map reference information.

Table 10 shows the mobile location data attributes that will be used in the interface.

Attribute Name	Attribute Length	Message Type	Mandatory/ Optional	Attribute Description	Notes
X co-ordinate	10	MOB TMS	M M	The X and Y attributes describe the centre of an ellipse. The X&Y co-ordinates will be OSGB36, Irish Grid or WGS84 co-ordinates depending on where the X and Y actually lie. The “Co-ord system” parameter dictates which co-ordinate system is being used. **OSGB36** All areas within the UK, or extending 10 Km into the sea off the UK coastline will be passed as OSGB 36. OSGB36 specifies X (Easting) and Y (Northing) as Cartesian co-ordinates measured in metres. **Irish Grid** All areas within Northern Ireland, or extending up to 10 Km into the sea off the NI coastline or 2 km into the republic of Ireland will be passed as Irish Grid. Irish Grid specifies X and Y as Cartesian co-ordinates measured in metres. **WGS84** All X,Y points not falling within the OSGB36 or Irish Grid regions will be passed as WGS84. The “X” value will represent the latitude and the “Y” value represents longitude. Latitude and longitude will be presented in the form IDDMMSS.HH where I is N, S, E or W DD is degrees MM is Minutes SS is seconds HH is hundredths of seconds	The diagram below shows the ellipse describing attributes returned for a mobile response.. 
Y co-ordinate	10	MOB TMS	M M		

Attribute Name	**Attribute Length**	**Message Type**	**Mandatory/ Optional**	**Attribute Description**	**Notes**
SemiMajor	6	MOB TMS	M M	These attributes describe length of the two axis of the ellipse in metres from the origin (X & Y) to the edge of the ellipse.	
SemiMinor	6	MOB TMS	M M		
Angle	6	MOB TMS	M M	This is the angle in degrees of rotation of the ellipse measured clockwise from north to the semiMajor axis. This is a floating point number in the range 0 to 179.99 degrees, eg “102.56”	
Co-ord system	7	MOB TMS	M M	This attribute indicates the co-ordinate system the X and Y co-ordinates are encoded in. Three values are currently possible, “OSGB36” will be used for mainland Britain and “IRG” will be used to indicate Irish Grid for Northern Ireland. Any co-ordinates that cannot be translated to either OSGB36 or IRG will be passed as “WGS84”.	
Level of Confidence	3	MOB TMS	M O	This attribute indicates the probability as a percentage that the 999 call is being made from within the defined area.	Co-ordinates are provided by the MLOs GMLC in WGS84, they are then converted prior to being posted on EISEC. If the co-ordinates cannot be converted for any reason then the data will be posted on EISEC exactly as it was received from the MLO GMLC.
Altitude	5	MOB	O	Altitude of phone in metres. Altitude is relative to sea level and will have a prefix of either “+” or “-“, giving a range of between –9999 metres and +9999 metres.	Functionality not currently provided by any of the MLOs.

Attribute Name	**Attribute Length**	**Message Type**	**Mandatory/ Optional**	**Attribute Description**	**Notes**
Speed	3	MOB	O	Speed in metres per second	Functionality not currently provided by any of the MLOs.
Direction	3	MOB TMS	O O	Direction phone is moving. This attribute will be formatted as an angle in the range 0 to 359 and is measured in degrees.	
Address	Variable	MOB	O	Some Mobile operators operate “Pico cells” and "Underground cells“ whose coverage is limited to a building, or a line or even a floor of a building. Limited Address information will be available from these operators. Note that the address given will be the address where the cell antenna is installed. Where a cell address may be available, this will follow the structure for fixed line as described in section 4.6. Other Mobile Operators have designated underground Zone Codes where one of these is detected the AC Address field will contain the word “Underground” and the location indicated by the coordinates will be the entrance to an underground station.	No MLO has specified any detailed information about address format. We will however endeavour to place any postcode provided in field AF to be consistent with the fixed line name and address data.
EDSP	5	TMS	O	This field identifies the Emergency Data Service Provider as a numeric identifier. The field can have the following values	

Attribute Name	Attribute Length	Message Type	Mandatory/ Optional	Attribute Description	Notes
				00000 BT Operator 00008 Allianz 00010 RealRider If unknown this field will be blank (5 space characters)	
Vehicle Make	20	TMS	O	This represents the vehicle make. Where not available this field will contain the space padded value of “Unknown”.	
Vehicle Model	25	TMS	O	This represents the vehicle model. Where not available this parameter should contain the space padded value of “Unknown”.	
Vehicle Colour	20	TMS	O	This represents the colour of the vehicle. Where possible this will be the base colour description rather than manufacturer colour descriptions i.e. Blue rather than Parisian Blue. Additional description is possible where this makes it easier to identify the vehicle such as metallic or colour/colour (e.g. Red/Blue) where dual colours or two-tone colour schemes are readily visible. Where not available this parameter should contain the space padded value of “Unknown”.	
Vehicle Registration	12	TMS	O	The vehicle registration mark as displayed on the vehicle. This will be presented without contained spaces. Where not available this parameter	

Attribute Name	**Attribute Length**	**Message Type**	**Mandatory/ Optional**	**Attribute Description**	**Notes**
				should contain the space padded value of "Unknown".	
Call Trigger Information	20	TMS	O	This parameter will clearly indicate the method by which the emergency call was triggered. Some examples are: Emergency Button or Auto Airbag triggered or Auto Crash Sensor or Manual Dial Where not available this parameter should contain the space padded value of "Unknown".	
Telephone Area Code	10	TMS	O	The telephone area code is that of the approximate location of the mobile.	
Miscellaneous Information	560 (see note)	TMS	O	This field may contain any characters from the ASCII set in the range of 0x20 to 0x7E (decimal 32 to 126 or characters 'space' to '~'). The language should be in UK English as operators can currently only utilise English texts.	A maximum of 560 characters is received by BT, this exceeds the available field size on EISEC. To overcome this the EISEC PDU may contain the words "Call Operator" Further details of how this scenario is handled can be found at the end of Section 0 on page 50.

Table 10 Location Data Attributes for Mobile and Telematics Calls

In the “Data Available” message the TN and NA fields are formatted in the same way as the “Searching” message, except that the re-query delay (including the comma delimiter) in the NA field is optional. The presence of a re-query delay parameter indicates that improved location information is likely to be received and EISEC should be re-queried after the suggested delay period has passed.

In the event that no re-query delay is specified then this field will not be passed in the NA field and its PDU length field value will be reduced from 56 to 52.

The date attribute will also be in the same format as the “Searching” message but will contain the date/time provided by the MLO or EDSP with the location data. There is no guarantee that this time will be synchronised with the BT generated time in the “Searching” message.

4.7.4 Mobile Location Information (Call Type Indicator = “*MOB*”)

The mobile location information messages will contain the information in the tables below. The table shows both mandatory and optional attributes.

QP PDU Field	Field Length	Proposed Mobile Attributes (Attribute lengths).	Total Number of characters used (inc commas).	Number of spare characters
TN	20	Mobile CLI (20)	20	0
NA	56	Mobile Licensed Operator Name (15) SL digits (2) = “99” or “98” Date/Time supplied by MLO (14) Status Code (2) = “0” Status text (15) = “Data Available” Re-query Delay (3) [Optional]	16 3 15 3 16 3 ----------------- 56	0
AA	35	X (10) Y (10) SemiMajor (6) SemiMinor (6)	11 11 7 6 35	0
AB	35	Level of Confidence (3) Angle (6) Co-ord System (7) Altitude [Optional] (5) Direction [Optional] (3) Speed [Optional] (3)	4 7 8 6 4 3 ---------------- 32	3
AC	35	Mobile Antenna address line 1 [Optional]	Size of Address Data	N/A

QP PDU Field	Field Length	Proposed Mobile Attributes (Attribute lengths).	Total Number of characters used (inc commas).	Number of spare characters
AD	35	Mobile Antenna address line 2 [Optional]	Size of Address Data	N/A
AE	35	Mobile Antenna address line 3 [Optional]	Size of Address Data	N/A
AF	35	Mobile Antenna address line 4 + postcode [Optional]	Size of Address Data	N/A

Table 11 Mobile QP PDU Location Attributes

Note that mobile address lines 1 to 4 in fields AC to AF may contain commas as part of the address structure. An example of the attributes in a “Data Available” message is shown. The characters in blue (ReQuery Delay, altitude, direction and speed) are optional attributes

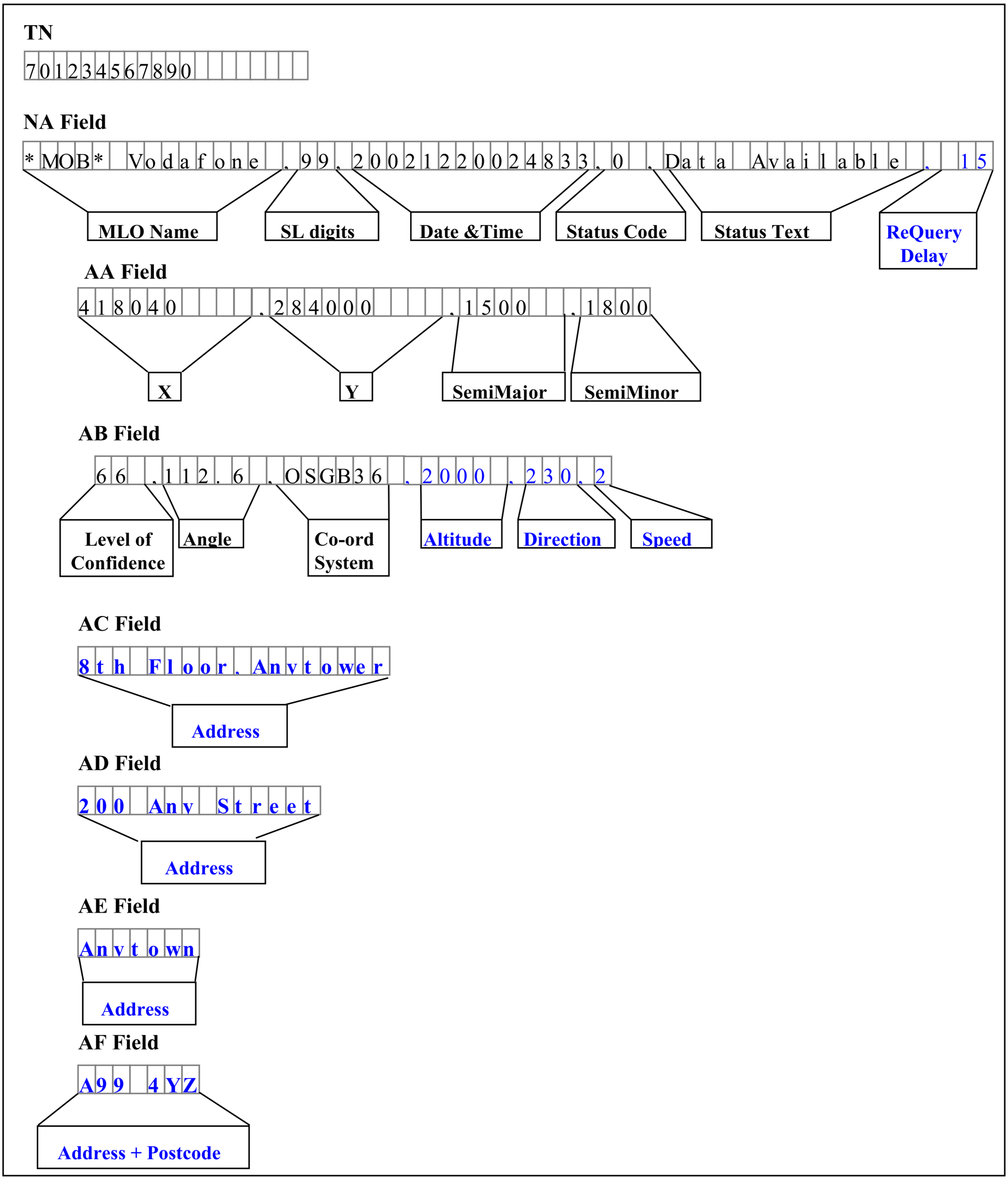

TN
7012345678 90
NA Field
MOB Vodafone ,99,20021220024833,0 ,Data Available ,15
MLO Name
SL digits
Date &Time
Status Code
Status Text
ReQuery Delay
AA Field
418040 ,284000 ,1500 ,1800
X
Y
SemiMajor
SemiMinor
AB Field
66 ,112,6 ,OSGB36 ,2000 ,230,2
Level of Confidence
Angle
Co-ord System
Altitude
Direction
Speed
AC Field
8th Floor, Anytower
Address
AD Field
200 Any Street
Address
AE Field
Anytown
Address
AF Field
A99 4YZ
Address + Postcode

Figure 4 QP PDU Field format for mobile “Data Available” Message

4.7.5 Telematics Location Information (Call Type Indicator = “*TMS*”)

The telematics information messages will contain the information in the tables below. The table shows both mandatory and optional attributes.

As with the mobile version of the Data Available message the TN and NA fields are formatted in the same way as the “Searching” message, except that the re-query delay (including the comma delimiter) in the NA field is optional.

The date attribute will be in the same format as the “Searching” message but will contain the date/time provided by the EDSP with the location data. There is no guarantee that this time will be synchronised with the BT generated time in the “Searching” message.

QP PDU Field	Field Length	Proposed Mobile Attributes (Attribute lengths).	Total Number of characters used (inc commas).	Number of spare characters
TN	20	Mobile CLI (20)	20	0
NA	56	Mobile Licensed Operator Name (15) SL digits (2) = “99” or “98” Date/Time supplied by MLO (14) Status Code (2) = “0” Status text (15) = “Data Available”	16 3 15 3 15 ----------------- 52	4
AA	35	X (10) Y (10) SemiMajor (6) SemiMinor (6)	11 11 7 6 35	0
AB	35	Level of Confidence (3) Angle (6) Co-ord System (7) EDSP (5) Direction (3)	4 7 8 6 3 ---------------- 28	7
AC	35	Call Trigger (20) Telephone Area Code (10)	21 10 ----------------- 31	4
AD	35	Vehicle Registration (12) Vehicle Make (20)	13 20 ---------------- 33	2

QP PDU Field	Field Length	Proposed Mobile Attributes (Attribute lengths).	Total Number of characters used (inc commas).	Number of spare characters
AE	35	Vehicle Model (25)	25 --------------- 25	10
AF	35	Vehicle Colour (20) Additional Notes (14)	21 14 --------------- 35	0

In some cases we may get emergency data from a telematics system with no accompanying voice call. In this case the MLO name field and SL field be left blank. If a voice call is subsequently received the MLO field will be updated with the MLO name and SL digits.

Table 11 Telematics QP PDU Location Attributes

At the request of the emergency authorities BT has maintained the fixed length field format originally used for name and address, however there is insufficient room in this structure to fully accommodate longer miscellaneous information data (PDU AF Field). In the event that a message is longer that the space available this field will contain the message “Call Operator” indicating to the EA that a callback should be made to the BT operator who will be able to verbally pass this data.

An example of the attributes in a “Data Available” message is shown below. The characters in blue are optional attributes.

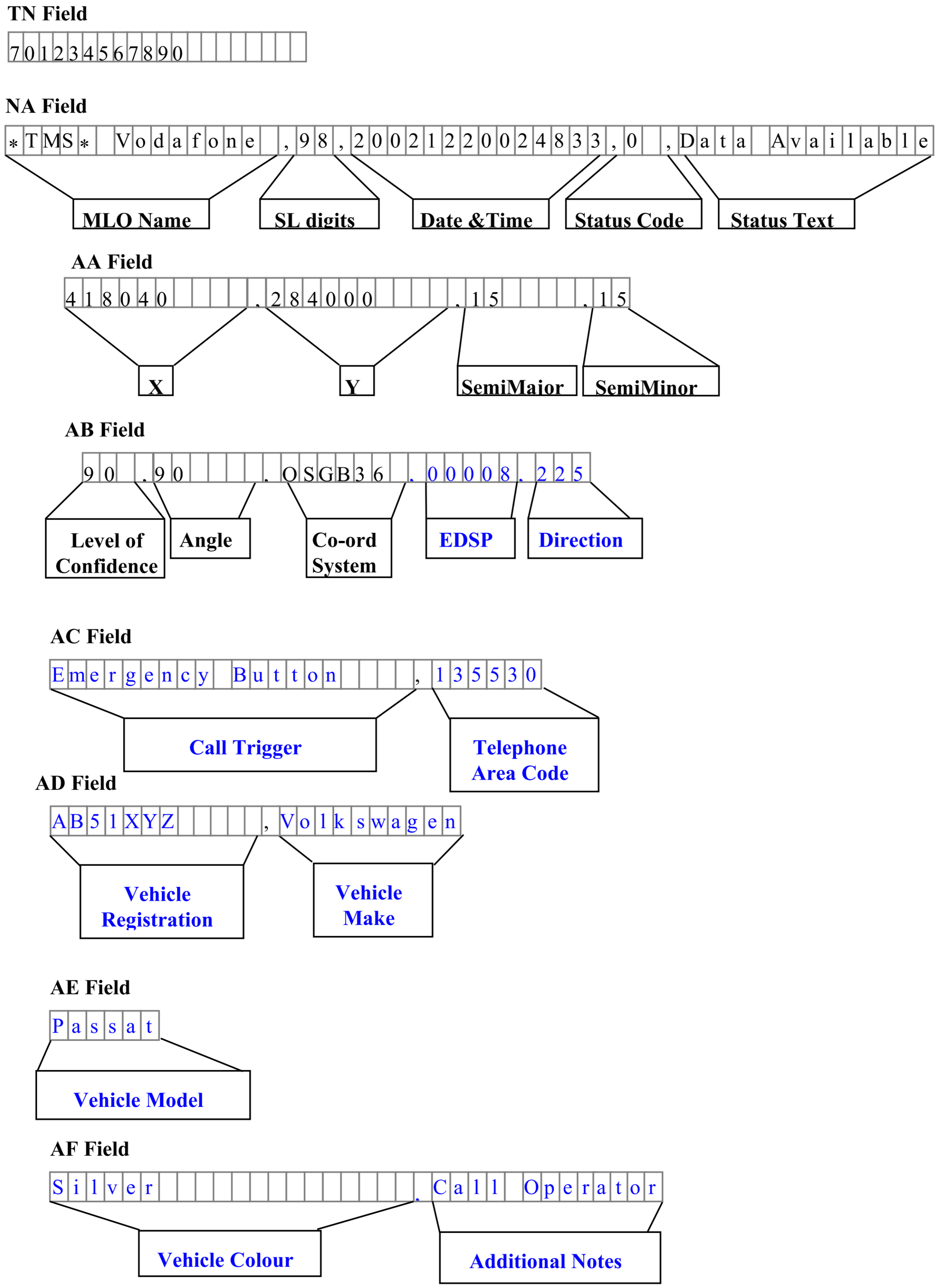

TN Field
7012345678 90
NA Field
TMS Vodafone ,98,20021220024833,0 ,Data Available
MLO Name
SL digits
Date &Time
Status Code
Status Text
AA Field
418040 ,284000 ,15 ,15
X
Y
SemiMajor
SemiMinor
AB Field
90 ,90 ,OSGB36 ,00008,225
Level of Confidence
Angle
Co-ord System
EDSP
Direction
AC Field
Emergency Button ,135530
Call Trigger
Telephone Area Code
AD Field
AB51XYZ ,Volkswagen
Vehicle Registration
Vehicle Make
AE Field
Passat
Vehicle Model
AF Field
Silver ,Call Operator
Vehicle Colour
Additional Notes

Figure 5 QP PDU Field Format for Telematics "Data Available" Message

4.7.6 eCall Information

eCall is a variation of the Telematics system. The data set produced by eCall is different to the Telematics data set. eCall messages do not contain the following attributes present in a telematics EDM:

- An EDSP identifier
- Vehicle Make
- Vehicle Model
- Vehicle Colour
- Vehicle Registration number.
- Date and time the incident was triggered.

eCall introduces three new data attributes, these are:

- Vehicle Class
- VIN
- Fuel Type

Vehicle Class is a code describing the class of the vehicle and will be one of the following

Code	Description
M1	Passenger Vehicle
M2	Buses and Coaches
M3	Buses and Coaches
N1	Light Commercial Vehicles
N2	Heavy Duty Vehicles
N3	Heavy Duty Vehicles
L1e	Motorcycles
L2e	Motorcycles
L3e	Motorcycles
L4e	Motorcycles
L5e	Motorcycles
L6e	Motorcycles
L7e	Motorcycles

VIN is the vehicle identification number as defined in ISO 3779

Fuel Type will be one or more of the following values. Where more than one fuel type is present values will be separated by a “/”character, for example “Petrol/LPG”

- Petrol
- Diesel
- CNG
- LPG
- Electric
- Hydrogen
- Other

The eCall 'Data Available' message will differ from the telematics 'Data Available' message in the following ways:

1. The Vehicle registration field (AD fields, first 12 characters) will now contain the text "*eCALL*" which will be left justified and padded with spaces out to fill 12 characters.
2. The Date/Time value in the NA field will not be that passed from the EDSP, instead it will be generated by BT and will be the date and time the call was made.
3. The EDSP identifier in the AB field will not be populated, instead it will be padded with spaces.
4. The Vehicle Make field (AD field character 14 to 33) will contain the text "Vehicle Class:" followed by the Vehicle Class code (e.g. "M1") which will be left justified and padded with spaces.
5. The Vehicle Model field (AE) will contain the text "VIN:" followed by the Vehicle VIN number which will be left justified and padded with spaces.
6. The Vehicle Colour field (AF) will contain the text "Fuel:" followed by the Fuel Type which will be left justified and padded with spaces.

The table below shows the formatting of the eCall Data Available message. Fields that are identical to the telematics structure have been greyed out to highlight only the changed eCall fields.

QP PDU Field	Field Length	Proposed Mobile Attributes (Attribute lengths).	Total Number of characters used (inc commas).	Number of spare characters
TN	20	Mobile CLI (20)	20	0
NA	56	Mobile Licensed Operator Name (15) SL digits (2) = “98” Date/Time the call arrived with BT(14) Status Code (2) = “0” Status text (15) = “Data Available”	16 3 15 3 15 ----------------- 52	4
AA	35	X (10) Y (10) SemiMajor (6) SemiMinor (6)	11 11 7 6 35	0
AB	35	Level of Confidence (3) Angle (6) Co-ord System (7) EDSP (5)(blank)Direction (3)	4 7 8 6 3 ---------------- 28	7
AC	35	Call Trigger (20) Telephone Area Code (10)	21 10 ----------------- 31	4
AD	35	*eCALL* (12) Vehicle Class (20)	13 20 ---------------- 33	2
AE	35	Vehicle VIN Number (25)	25 --------------- 25	10
AF	35	Fuel Type (20) Additional Notes (14)	21 14 --------------- 35	0

Glossary

ASCII	American Standard Code for Information Interchange.
AML	Advanced Mobile Location.
BT	British Telecommunications plc.
EA	Emergency Authorities.
EDSP	Emergency Data Service Provider.
eCall	Telematics emergency call using EC's standard approach with a modem to transmit vehicle data over the voice path
EISEC	Enhanced Information Service for Emergency Calls.
ETX	End Transmission.
GIS	Geographic Information System
GMLC	Gateway Mobile Location Centre.
IPS	Interface Protocol Specification.
IRG	Irish Grid, GIS co-ordinate system preferred by Northern Irish EAs.
LES	Location Enabled Server.
MLO	Mobile Licensed Operators.
NAA	Name and Address.
OSGB36	Ordnance Survey Great Britain 1936. The co-ordinate system preferred by Mainland UK EAs.
SIN	Supplier Information Note.
SL	Service and Language.
STX	Start Transmission.
TCP/IP	Transmission Control Protocol/Internet Protocol.
WGS84	World Geodetic System 1984.

End of Document